Engineering Analysis
Hexcel Corporation
Facility No. 712-0058
Synthetic Minor Operating Permit Application

On March 16, 2016, the Department received an application from Hexcel Corporation located in Decatur, AL. Hexcel which is currently under a Title V permit is submitting this application to become a Synthetic Minor Operating Permit (SMOP) source.

Hexcel was issued a Title V permit on June 9, 2014 based on the greenhouse gas (GHG) emissions potential to emit (PTE) being greater that 100,000 tons per year. This Title V permit was issued for the site wide emissions for Process Lines A, C, D, E, and F. Based on a decision by the United States Supreme Court in 2014 concerning the tailoring portion of the GHG permitting rule and the revisions to the Department's regulations in November 2014, Hexcel is no longer required to maintain a facility Title V permit.

Hexcel is currently a synthetic minor source for Hazardous Air Pollutants (HAPs), a major source for PSD (CO emissions), and would also become a minor source for Title V with the processing of this application.

Hexcel proposes to limit the natural gas usage to maintain synthetic minor status for the pollutant carbon monoxide (CO).

The following emission units would come under the SMOPs for the Hexcel facility:

Boilers

- Boiler B-1000-1 (36.0 MMBTU/hr)
- Boiler B-1000-2 (36.0 BTUMM/hr)
- Boiler B-1000-3 (32.7 MMBTU/hr)
- Boiler B-9210-1 (32.7 MMBTU/hr)
- Boiler B-9210-2 (32.7 MMBTU/hr)
- Boiler B-9210-3 (30.6 MMBTU/hr)
- Boiler B-9210-7 (40.823 MMBTU/hr) (Line G)
- Boiler B-9210-8 (40.823 MMBTU/hr) (Line G)
- Boiler B-9210-9 (40.823 MMBTU/hr) (Line H)

PAN Process Lines (Spinning)

- Lines (A, C, D, E, F)
- Line (G)
- Line (H)

Emergency Generators

- Diesel Emergency Generator Z-8501-X10 (487 HP) (Through Line F)
- Diesel Emergency Generator Z-8542-X2 (480 HP) (Through Line F)
- Diesel Emergency Generator Line G (480 HP)
- Diesel Emergency Generator Line H (480 HP)

Fire Pumps

- Diesel Fire Pump PM-841-1 (266 HP)
- Diesel Fire Pump PM-841-2 (266 HP)

Packed Scrubbers

- Packed Scrubber A-227-1 (Low Flow, High Concentration) (Lines A, C, D, E, F)
- Packed Scrubber A-227-2 (Low Flow, High Concentration) (Lines A, C, D, E, F)
- Packed Scrubber A-227-3 (High Flow, Low Concentration) (Lines A, C, D, E, F)
- Packed Scrubber A-7227-1 (Low Flow, High Concentration) (Line G and Line H)
- Packed Scrubber A-7227-2 (High Flow, Low Concentration) (Line G and Line H)

Storage Tanks

- T-101-1A 100,000 Gallon Acrylonitrile Storage Tank with Internal Floating Roof
- T-101-1B 100,000 Gallon Acrylonitrile Storage Tank with Internal Floating Roof
- T-105-1 7,600 Gallon Methacrylic Acid Storage Tank
- T-105-1B 10,000 Gallon Methacrylic Acid Storage Tank
- T-107-1A 2,600 Gallon Recovered Monomer Storage Tank Vented to Scrubbers A-227-1 or A-227-2
- T-107-1B 2,600 Gallon Recovered Monomer Storage Tank Vented to Scrubbers A-227-1 or A-227-2
- T-107-1C 2,600 Gallon Recovered Monomer Storage Tank Vented to Scrubbers A-227-1 or A-227-2
- T-203-1B 6,000 Gallon Monomer Preparation Tank Vented to Scrubbers A-227-1 or A-227-2
- T-205-1B 6,000 Gallon Monomer Feed Tank Vented to Scrubbers A-227-1 or A-227-2
- T-701-1 20,000 Gallon Co-Monomer Storage Tank

Wastewater Treatment Plants (WWTP)

- WWTP (Lines A, C, D, E, F)
- WWTP (Lines G and Line H)

Cooling Towers

- Cooling Tower (Lines A, C, and D)
- Cooling Tower (Lines E and F)
- Cooling Tower (Lines G and H)

Others

- Pressure Washer
- Fugitives

Process Description:

Hexcel produces polyacrylonitrile (PAN) that is used in the production of carbon fibers. The facility consists of the Raw Material Tank Farm, Polymerization Section, Dissolving Section, Spinning Section, Drying and Winding Section, and Solvent Recovery and Recycle Section.

Emissions:

The emissions of a single Hazardous Air Pollutant (HAP), acrylonitrile (AN), would be less than the significance threshold of 10 tons/yr. It is also noted that the total HAP emissions are less than 25 tons/yr.

The potential emissions for the facility are shown in Appendix A.

The potential emissions for the boilers are based on natural gas, the only fuel fired by boilers B-1000-1, B-1000-2, B-1000-3, B-9210-1, B-9210-2, B-9210-3, B-9210-7, B-9210-8 and B-9210-9. Boilers B-1000-3, B-9210-1, B-9210-2, B-9210-3, B-9210-7, B-9210-8 and B-9210-9 have ultra-low NO_x burners with flue gas recirculation. The potential emissions for these boilers are included in Appendix A.

Hexcel has proposed to limit the amount of natural gas usage in the boilers to maintain facility wide CO emissions to less than 100 tons/yr. The amount of natural gas to be used during a 12 month rolling period is 2,250 MMscf/yr. Hexcel will monitor the facility wide natural gas usage through record keeping and will submit quarterly reports on this usage.

It is noted that the potential emissions for the engines (emergency generators and fire pumps) are based on operating a maximum of 500 hours per year.

Title V:

Hexcel was issued a Title V permit on June 9, 2014 based on the greenhouse gas (GHG) emissions potential to emit (PTE) being greater that 100,000 tons per year. This Title V permit was issued for the site wide emissions for Process Lines A, C, D, E, and F. Based on a decision by the United States Supreme Court in 2014 concerning the tailoring portion of the GHG permitting rule and the revisions to the Department's regulations in November 2014, Hexcel is no longer required to maintain a facility Title V permit.

For this application submittal, Hexcel would become a synthetic minor source and not be subject to Title V. Hexcel will remain a minor source due to operational limits and emission limits taken to be a synthetic minor source and remain below the 100 tons/yr major source threshold. Therefore, Hexcel would not be subject to a Title V permit at this time.

PSD:

Prior to this application submittal, Hexcel was a major source for the Prevention of Significant Deterioration (PSD) for CO emissions. For this application submittal, Hexcel would become a minor source due to taking a synthetic minor limit for CO emissions and therefore would not be subject to a PSD review at this time.

NSPSs:

The New Source Performance Standards for Volatile Organic Liquid (VOL) Storage Vessels (NSPS, Subpart Kb) would be applicable for the two 100,000 gallon AN internal floating roof storage tanks (T-101-1A and T-101-1B) because their capacities are greater than 39,894 gallons (151 m^3) each and the stored material has a true vapor pressure greater than 0.51 psia (3.5 kPa). The vapor pressure of AN is 1.6 psia. However, since Hexcel would be a minor source of HAPs, this storage vessel would be required to comply only with the requirements of NESHAP Subpart LLLLLL.

The two MAA storage tanks (T-105-1 and T-105-1B) would not be subject to the NSPS, Subpart Kb since their capacities (7,600 gallons and 10,000 gallons respectively) are less than 19,815 gallons (75 m^3). The vapor pressure of MAA is 0.2 psia.

The co-monomer storage tanks (T-107-1A, T-107-1B, T-107-1C, T-203-1B, T-205-1B) would not be subject to the NSPS, Subpart Kb since their capacities (2,600 gallons, 2,600 gallons, 6,000 gallons, 6,000 gallons, and 6,000 gallons respectively)) are less than 19,815 gallons (75 m^3). These tanks vent to scrubbers A-227-1 or A-227-2.

The New Source Performance Standard for Small Industrial-Commercial-Institutional Steam Generating Units (NSPS, Subpart Dc) would be applicable to boilers B-1000-3, B-9210-1, B-9210-2, B-9210-3, B-9210-7, B-9210-8, and B-9210-9. These units fire only natural gas and therefore, would be subject to only the initial notification and monthly fuel recordkeeping of 40 CFR 60.48c(a) and 40 CFR 60.48c(g), respectively. The other boilers, B-1000-1 and B-1000-2, were installed before the June 9, 1989 applicability date and therefore are not subject to Subpart Dc. However, Hexcel will keep track of the monthly fuel usage for these two boilers also due to taking a fuel limit.

The NSPS, Subpart IIII "Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE)" would be applicable to the new generators since the stationary CI ICE would be modified or reconstructed after July 11, 2005. The generators and engines are described as follows.

Line G and Line H Generators (2 – 480 HP each)
These two emergency generators are subject to the emission standard for new non-road CI engines in 40 CFR 60.4202. These engines must be equipped with a non-resettable hour meter and will be limited to 100 hours per year of maintenance checks and readiness testing. Based on 40 CFR 60.4214(b), an initial notification is not required for emergency engines. Hexcel must comply with the applicable fuel requirements and the operation and maintenance requirements of NSPS, Subpart IIII.

Diesel Emergency Generator Z-8542-X2 (480 – HP)

This existing generator is subject to the emission standard in new non-road CI engines in 40 CFR 60.4202. This engine must be equipped with a non-resettable hour meter and will be limited to 100 hours per year of maintenance and testing. Based on 40 CFR 60.4214(b), an initial notification is not required for emergency engines. Hexcel must comply with the applicable fuel requirements and the operation and maintenance requirements of NSPS, Subpart IIII.

Diesel Emergency Generator Z-8501-X10 (487 – HP) and Fire Pumps PM-841-1, PM-841-2 (2 – 266 HP each)

This existing generator and two fire pumps would not be subject to NSPS, Subpart IIII since they were constructed prior to June 12, 2005 as stated in 40 CFR 60.4200(a)(2). These units were constructed in 1989.

NESHAPs:

The generators and engines are subject to Subpart ZZZZ of Part 63 "National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)" since they meet the definition of an emergency stationary RICE per 40 CFR 63.6590(b)(3). The compliance date for existing engines is May 3, 2013 and the new engines must comply at startup. The generators and engines are described as follows.

Line G and Line H Generators (2 – 480 HP each)

This engine is a new emergency stationary RICE because it would be constructed after June 12, 2006. This engine will comply with the Subpart ZZZZ requirements by meeting the requirements of 40 CFR 60, Subpart IIII as stated in 40 CFR 63.6590(c). No other requirements would apply under Subpart ZZZZ.

Diesel Emergency Generator Z-8542-X2 (480 – HP)

This engine is a new emergency stationary RICE because it would be constructed after June 12, 2006. This engine will comply with the Subpart ZZZZ requirements by meeting the requirements of 40 CFR 60, Subpart IIII as stated in 40 CFR 63.6590(c). No other requirements would apply under Subpart ZZZZ.

Diesel Emergency Generator Z-8501-X10 (487 – HP) and Fire Pumps PM-841-1, PM-841-2 (2 – 266 HP each)

This one engine and two fire pumps are existing emergency stationary RICE because they were constructed prior to June 12, 2006. These engines must be equipped with a non-resettable hour meter. There would be no numerical emission limitations. An initial notification would not be required for an existing emergency engine that are not subject to any numerical emission limits as stated in 40 CFR 63.6645(a)(5). Hexcel must comply with these requirements of Subpart ZZZZ.

Hexcel is currently subject to the Subpart LLLLLL of Part 63 "National Emission Standards for Hazardous Air Pollutants for Acrylic and Modacrylic Fibers Production Area Sources". The initial compliance date for this existing source was January 16, 2008. Based on the definition of applicability in 40 CFR 63.11393 (b), Hexcel's acrylic fiber plant was constructed before April 4, 2007 as stated in 40 CFR 63.11293(b)(1). Therefore, the entirety of sources would continue to be subject to the requirements for existing sources.

Under Subpart LLLLLL of Part 63, the polymerization process equipment would be limited to less than 0.2 lb/hr of acrylonitrile emissions and the monomer recovery process equipment would be limited to less that 0.05 lb/hr of acrylonitrile emissions. The packed column scrubbers A-227 -1, A-227-2, and A-7227-1 would control the polymerization process equipment and packed column scrubbers A-227-3 and A-7227-2 would control the monomer recovery process equipment.

Hexcel would not be subject to the "Boiler MACT", 40 CFR 63, Subpart DDDDD. This MACT would not be applicable because of Hexcel applying for a SMOP that would limit the HAPs emissions below the major source threshold of 10 tons/yr for any individual HAP and 25 tons/yr for all combined HAPs.

The National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Industrial, Commercial, and Institutional Boilers Area Sources, 40 CFR 63, Subpart JJJJJJ would not be applicable. Based on the definition of a gas fired boiler as referenced in 40 CFR 63.11237, the boilers for Hexcel comply with this definition by only combusting natural gas. Based on 40 CFR 63.11195(e), these gas-fired boilers are exempt from this rule. It is noted that the Department has not adopted the area source MACT Subpart JJJJJJ.

Air Toxics:

The air toxics that would be emitted are shown in Table 1.

Table 1 – Air Toxics and Sources Emitted	
Source	**Air Toxics**
Polymerization	Acrylonitrile
Monomer Recovery	Acrylonitrile
Wastewater Treatment (fugitive and point)	Acrylonitrile
Other Fugitive Sources	Acrylonitrile

Since these point sources are regulated by a MACT; an air toxics review would not be required.

Class I Area:

Hexcel is located within a 100 km radius of the Sipsey Wilderness Class I Area. However, the current potential emission from this application submittal should not significantly impact the area since no air toxics would be expected to be emitted in significant quantities.

Recommendations:

After a 15 day public notice, a response to comments if required, and upon receipt of fees, I recommend that the following Synthetic Minor Air Permits be issued to this facility subject to the attached provisos.

712-0058-X026 Boilers:

36.0 MMBTU/hr Natural Gas-Fired Boiler (B-1000-1)
36.0 MMBTU/hr Natural Gas-Fired Boiler (B-1000-2)
32.659 MMBTU/hr Natural Gas Fired-Boiler (B-1000-3)
32.659 MMBTU/hr Natural Gas-Fired Boiler (B-9210-1)
32.659 MMBTU/hr Natural Gas-Fired Boiler (B-9210-2)

	32.618 MMBTU/hr Natural Gas-Fried Boiler (B-9210-3) 40.823 MMBTU/hr Natural Gas-Fired Boiler (B-9210-7) 40.823 MMBTU/hr Natural Gas-Fired Boiler (B-9210-8) 40.823 MMBTU/hr Natural Gas-Fired Boiler (B-9210-9)
712-0058-X027	Polymerization Units and PAN Lines A, C, D, E, F, G, H with Process Equipment vented to Packed Columns (Scrubbers A-227-1, A-227-2, A-227-3, A-7227-1, and A-7227-2)
712-0058-X028	Two 100,000 Gallon Acrylonitrile Storage Tanks (T101-1A and T101-1B) with Internal Floating Roofs 7,600 Gallon Methacrylic Acid Storage Tank (T-105-1) 10,000 Gallon Methacrylic Acid Storage Tank (T-105-1B) 10,000 Gallon Co-Monomer Storage Tank (T-701-1)
712-0058-X029	Storage tanks operated with a nitrogen blanket and vented to Scrubbers A-227-1 or A-227-2: 2,600 Gallon Recovered Monomer Storage Tank (T-107-1A) 2,600 Gallon Recovered Monomer Storage Tank (T-107-1B) 6,000 Gallon Recovered Monomer Storage Tank (T-107-1C) 6,000 Gallon Recovered Monomer Storage Tank (T-203-1B) 6,000 Gallon Recovered Monomer Storage Tank (T-205-1B)
712-0058-X030	<u>NSPS Emergency Generators</u>: Line G (480 HP) Line H (480-HP) Diesel Emergency Generator Z-8542-X2 (480 HP) <u>NESHAP Emergency Generators</u>: Diesel Emergency Generator Z-8501-X10 (487 HP) <u>NESHAP Fire Pumps</u>: PM-841-1 (266 HP) PM-841-2 (266 HP)

These recommendations are based on the emission limits meeting all applicable state and federal regulations for this application.

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James H. Adams
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Chemical Branch
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May 3, 2016
Date

JHA:jha

Appendix A
Hexcel Corporation
Potential Emissions (Facility Wide)
Synthetic Minor Operating Permit Application
Decatur, AL

Unit	NOx ton/yr	SO2 ton/yr	PM ton/yr	PM-10 ton/yr	PM-2.5 ton/yr	CO ton/yr	VOC ton/yr	Lead ton/yr	Acrylonitrile ton/yr	Total HAPs ton/yr	CO_2e ton/yr
Boiler B-1000-1	15.46	0.09	1.17	1.17	1.17	12.99	0.85	7.73E-05		0.29	18,450.00
Boiler B-1000-2	15.46	0.09	1.17	1.17	1.17	12.99	0.85	7.73E-05		0.29	18,450.00
Boiler B-1000-3	4.49	0.08	1.07	1.07	1.07	11.80	0.77	7.02E-05		0.27	16,759.00
Boiler B-9210-1	4.49	0.08	1.07	1.07	1.07	11.80	0.77	7.02E-05		0.27	16,759.00
Boiler B-9210-2	4.49	0.08	1.07	1.07	1.07	11.80	0.77	7.02E-05		0.27	16,759.00
Boiler B-9210-3	4.21	0.23	1.34	1.34	1.34	11.04	0.40	6.57E-05		0.25	15,692.00
Boiler B-9210-7	5.61	0.30	1.79	1.79	1.33	14.73	0.54	8.76E-05		0.33	20,922.00
Boiler B-9210-8	5.61	0.30	1.79	1.79	1.33	14.73	0.54	8.76E-05		0.33	20,922.00
Boiler B-9210-9	5.61	0.30	1.79	1.79	1.33	14.73	0.54	8.76E-05		0.33	20,922.00
Scrubber A-227-1							0.88		0.88	0.88	
ScrubberA-227-2							0.88		0.88	0.88	
Scrubber A-227-3							0.22		0.22	0.22	
Scrubber A-7227-1							0.88		0.88	0.88	
Scrubber A-7227-2							0.22		0.22	0.22	
Tank T101-1A							0.14		0.14	0.14	
Tank T101-1B							0.14		0.14	0.14	
Tank T105-1							0.007				
Tank T105-1B							0.002				
Tank T701-1							0.002				
PAN Lines (A, C, D, E, F)	0.08						1.31		0.48	0.48	
PAN Line (G)	0.08						0.25		0.10	0.10	
PAN Line (H)	0.08						0.25		0.10	0.10	
Process Fugitives (Lines A, C, D, E, F)							9.42		0.15	3.42	
Process Fugitives (Lines G and H)							9.42		0.08	3.42	
Pressure Washer	0.08	0.26	0.04	0.04	0.04	0.72				0.01	143.74
WWTP Lines (A, C, D, E, F)							0.46		0.41	0.41	
WWTP Lines (G and H)							0.82		0.80	0.80	
Diesel Emergency Generator (Z-8501-X10)	3.77	0.25	0.27	0.27	0.27	0.81	0.31			1.00E-02	139.44
Diesel Emergency Generator (Z-8542-X2)	0.79	0.25	0.04	0.04	0.04	0.69	0.3			1.00E-02	137.44
Line G Emergency Generator	0.79	0.25	0.04	0.04	0.04	0.69	0.3			1.00E-02	137.44
Line H Emergency Generator	0.79	0.25	0.04	0.04	0.04	0.69	0.3			1.00E-02	137.44
Diesel Fire Pump (PM-841-1)	2.06	0.14	0.15	0.15	0.15	0.44	0.17			3.00E-03	76.16
Diesel Fire Pump (PM-841-2)	2.06	0.14	0.15	0.15	0.15	0.44	0.17			3.00E-03	76.16
Cooling Tower (Lines A, C, D)			3.45	3.45	3.45						
Cooling Tower (Lines E and F)			1.97	1.97	1.97						
Cooling Tower (Lines G - H)			1.97	1.97	1.97						
Totals	**76.01**	**3.09**	**20.38**	**20.38**	**19.00**	**121.09**	**32.88**	**6.94E-04**	**5.48**	**14.78**	**166,482.82**

Total Emissions with the limit for CO emissions	**76.01**	**3.09**	**20.38**	**20.38**	**19.00**	**99.00**	**32.88**	**6.94E-04**	**5.48**	**14.78**	**166,482.82**